

REMARKS

The applicant respectfully requests reconsideration in view of the amendment and the following remarks. Claims 1-3, 5, and 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Setayesh et al. (Bridging the Gap between Polyfluorene and ladder-Poly-p-phenylene: Synthesis and Characterization of Poly-2,8-indenofluorene, *Macromolecules*, 2000, 33, 2016-2020) (“Setayesh”), in combination with Reisch (Dissertation, Oligo- und Poly(indenofluorence)..., Mainz, 2000, pp. 27 and 115) (“Reisch”) and evidenced by Kim (Assemblies of conjugated polymers. Intermolecular and intramolecular effects on the photophysical properties of conjugated polymers, *Pure appl. Chem.*, Vol. 74, No. 11, pp. 2031-2044, 2002)(“Kim”). Claims 6-7 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Setayesh in combination with Reisch and Inbasekaran (US 5777070) (“Inbasekaran”) and evidences by Kim. The applicant respectfully traverses these rejections.

The applicant affirms their election of Group I, claims 1-14. The applicant affirms their election of the species R1, R2, R3 and R4 equal to C₈H₁₇ alkyl group. Applicants respectfully traverse the Restriction requirement because the U.S. Patent and Trademark Office has not carried forward its burden of proof to establish distinctness.

In particular, MPEP § 803 states:

If the search and examination of an entire application can be made without serious burden, the Examiner must examine it on the merits, even though it includes claims to distinct or independent inventions.

The claims of the present invention would appear to be part of an overlapping search area. It is respectfully submitted that it would be necessary to search in all Classes and subclasses identified at page 2 of the outstanding Official Action.

Accordingly, Applicants respectfully traverse the outstanding Election requirement on the grounds that a search and examination of the entire application would not place a *serious* burden on the Examiner.

If the Examiner deems the elected claims are allowable, and maintains the restriction requirement, the applicant authorizes the Examiner to cancel the non-elected claims.

Prior Art Rejections

Claims 1-3, 5, and 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Setayesh in combination with Reisch and evidenced by Kim. Claims 6-7 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Setayesh in combination with Reisch and Inbasekaran and evidenced by Kim.

Setayesh is cited in the applicant's specification at page 2, lines 3-5. The statement of the Examiner at page 6 of the Office Action, that Setayesh discloses transindenofluorenes is correct. However, the applicant respectfully disagree with the Examiner's statement at the bottom of page 6 of the Office Action, "there is no direct evidence that trans structures (Examples 6-9) have inferior performance compared to cis-structure (Example 5)." The two polymers in the applicant's specification are directly comparable, i.e. polymers 5 and 6, because both have the same monomers. They only differ in that in example 5, the cis-indenofluorene is used whereas in example 6 the trans-indenofluorene is used (see the applicant's specification at page 19, lines 1-3).

As demonstrated clearly in Table 1, inventive polymer 5 has compared to comparative example 6 the following improved properties:

- a significant lower drive voltage V (4.3 cd/m^2 v. 5.7 cd/m^2);
- a significant lower color shift (0.03 v 0.06) (example 5 half the amount for example 6);
- a significant lower change in drive voltage during the half life of the device (1.0 v. 2.8) (example 5 about $1/3$ less than the amount for example 6) ; and
- a significant lower burn-in (3% v 12%) (example 5 is a factor of four less than example 6) .

Furthermore, inventive polymer 5, comprising cis-indenofluorene repeat units, is blue-shifted relative to the corresponding polymer 6, comprising trans-indenofluorene repeat units. The advantage of such a shift is described in the specification of the present application (page 2, lines 6-8 "sensitivity of the human eye").

As demonstrated above, comparative polymer 6 has a clearly inferior performance compared to inventive polymers. Only the half lives of both polymers are comparable.

Furthermore, inventive polymer 5 also has improved CIE-coordinates, drive voltage and half life compared with comparative polymers 7-9.

With respect to the monomers, the Examiner stated in the first full paragraph at page 7 of the Office action, "However, cis-indenofluorene, used in the Application is also known in the art". The applicant believes that this statement is not correct and respectfully requests the Examiner to submit evidence in support of this statement.

Setayesh only disclose trans-indenofluorene monomers, whereas according to the present invention only cis-indenofluorene monomers are used, which either have two bromine or two boronic ester groups. Reisch discloses cis-indenofluorenes which either have no substituents (compound 21) or tert.-butyl groups (compound 21a). Due to this fact, compound 21 leads to an oligomer (dimer-pentamer) where the units are linked together via the five-membered rings of the indenofluorene, whereas the indenofluorene repeating units of the inventive polymer are linked together via the terminal phenylene groups of the indenofluorene.

Also the statement of the Examiner stated in the middle of page 7 of the Office Action, "Kim evidences that introducing of cis-linkages in conjugated polymers used in light emitting devices leads to high emission yield". This statement is not correct, because in the middle of page 2040 (cited by the Examiner) it is only stated that "introducing cis-linkage in a PPV also realized high emission yield." PPV is a paraphenylene-vinylene polymer, which is not comparable with an indenofluorene polymer. Therefore, the Examiner has taken this statement out of context.

Inbasekaran does not cure the deficiencies of the other references. For the above reasons, this rejection should be withdrawn.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

A one month extension has been paid. Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 03-2775, under Order No. 14113-00027-US from which the undersigned is authorized to draw.

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Respectfully submitted,

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